GENERATOR, DATA

1. GENERAL. This procurement requires a dual-channel word generator capable of providing serial stimulus data hereafter referred to as "the equipment."

2. CLASSIFICATION. The equipment shall be Type II, Class 5, Style E, and Color R for Navy applications in accordance with MIL-T-28800.

3. DATA GENERATION REQUIREMENTS. The equipment shall be capable of generating serial data in accordance with the following specifications. The equipment shall be provided with two 1,024 bit channels that can be serialized to form a single 2,048 bit channel. Switch selectable return-to-zero and nonreturn-to-zero data formats shall be provided for each channel. The equipment outputs shall be TTL, ECL, and CMOS compatible.

3.1 Data generation modes.

3.1.1 Word mode. The equipment shall provide 99 or more independently programmable words. Word length shall be selectable from 3 or less to at least 32 bits.

3.1.2 Data mode. The equipment shall be provided with a mode in which the pattern is a continuous bit stream having a variable length from 3 or less to at least 2,048 bits.

3.1.3 Pseudo-random binary sequence (PRBS) mode. The equipment shall be capable of generating PRBS patterns of length (2 exponent n)-1 where n is selectable between values of 9, 10, 15, and 20.

3.1.4 Mixed mode. The equipment shall be capable of generating a pattern in which every odd numbered word is followed by a PRBS sequence. Maximum bit rate for this mode shall be at least 30 MHz.

3.1.5 Channel set and clear. The equipment shall be provided with a control that provides the operator with the ability to alternately fill the selected data channel with all ones or all zeros.

3.2 Data characteristics.

3.2.1 Amplitude. The equipment shall be provided with variable data output amplitudes from 0 to at least 15V into a 50 ohm load.

3.2.1.1 Amplitude reduction. Amplitude reduction of the output data shall not exceed 15% at the maximum bit rate.

3.2.2 Transition times. The transition time for all bit rates shall be no more than 8 ns.

3.2.3 Bit rates. The internal clock rate shall be variable from 50 Hz or less to at least 50 MHz. The duty cycle shall be a nominal 50%. The equipment shall operate with external clocks that have a frequency range of DC to at least 50 MHz and that have an amplitude of 0.8V or less to at least 7V.

3.2.4 Source resistance. The source resistance shall be front-panel selectable between 50 ohms and 1 kilohm.

3.2.5 Trigger input. The equipment shall be provided with a 50 ohm input that allows the generator to be triggered from external signals that have the following parameters.

a. trigger slope: positive.
b. pulse amplitude: 1V minimum, 7V maximum.

c. pulse width: 10 ns minimum.

3.2.6 Manual trigger. A front-panel switch that triggers an output of single bits, words, or frames shall be provided.

3.3 Connectors. Input and output connectors shall be female BNC.

4. GENERAL REQUIREMENTS.

4.1 Power source. The equipment shall be powered in accordance with the nominal power requirements of MIL-T-28800 except operation from 400Hz is not required. The maximum power required for operation shall not exceed 250W.

4.2 Dimensions and weight. The size and weight of the equipment shall be consistent with current commercial capabilities and shall not exceed the maximum dimensions for shipboard applications specified in MIL-T-28800. The weight shall not exceed 20kg (44 lb).

4.3 Lithium batteries. Per MIL-T-28800, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.